Volume 554 May 1, 1989

## MOLECULAR AND CELLULAR CONTROLS OF HEMATOPOIESIS<sup>a</sup>

Editor DONALD ORLIC

Scientific Organizing Committee
H. Broxmeyer, G. Chavez, A. Gordon,
F. Martinez-Sandoval, D. Orlic, and R. Shadduck

CONTENTS		
Preface. By Donald Orlic	ix	
Part I. Erythropoietin Production		
Factors That Affect the Rate of Erythropoietin Production by Extrarenal Sites.  By Walter Fried	1	
External Messengers and Erythropoietin Production. By James W. Fisher and Munehisa Ueno	9	
Erythropoietin-Dependent and Erythropoietin-Producing Cell Lines: Implications for Research and for Leukemia Therapy. By W. DAVID HANKINS, KYUNG L. CHIN, ROBERT DONS, and GEORGE SIGOUNAS	21	
Studies of the Constitutive Expression of the Mouse Erythropoietin Gene. By NEGA BERU, JEFFREY McDonald, and Eugene Goldwasser	29	
Part II. Regulators of Erythropoiesis		
Molecular Mechanism for the Inhibitory Action of Interferon on Hematopoiesis.  By Donald Orlic, Robert Gill, Roxanne Feldschuh, Federico Quaini, Andrea Malice, and Claudio Sandoval	36	
The Role of Interleukin-3 and Heme in the Induction of Erythropoiesis. By FRANCIS C. MONETTE	49	
The Effects of Interleukin-3, Bryostatin and Thymocytes on Erythropoiesis. By SAUL J. SHARKIS, JOHN P. LEONARD, JAMES N. IHLE, and W. STRATFORD	50	

"The papers in this volume were presented at a conference entitled Molecular and Cellular Controls of Hematopoiesis, which was sponsored by the Autonomous University of Guadalajara and New York Medical College and held in Ajijic, Mexico, on February 13-15, 1988.

Nutrition Requirements for Mammalian Cells and Hematopoietic Growth Factor Production. By Marcia J. Armstrong, Henry B. Warren, Peter F. Davies, and Nicholas Dainiak	66
Part III. Effects of Viruses on Hematopoiesis	
The Immune System as Mediator of Virus-Associated Bone Marrow Failure: B19 Parvovirus and Epstein-Barr Virus. By NEAL S. YOUNG, BRUCE BARANSKI, and GARY KURTZMAN	75
Genetic Relatedness of the Human Immunodeficiency Viruses Type 1 and 2 (HIV-1, HIV-2) and the Simian Immunodeficiency Virus (SIV). By G. Franchini and M. L. Bosch	81
Sustained Hypertransfusion and Induction of a Transplantable Myeloid Leukemia in RLV-A-Infected BALB/c Mice. By Gary Paul Leonardi, Joseph LoBue, Michael Manthos, Donald Orlic, and Jyotirmay	
Mitra	88
Part IV. Stromal Cell Regulation of Hematopoiesis	
Stromal Regulation of Hematopoiesis. By Peter J. Quesenberry, Ian K. McNiece, H. Elizabeth McGrath, Daniel S. Temeles, Gwen B. Baber, and Donna H. Deacon	116
Hematopoiesis on Nylon Mesh Templates: Comparative Long-Term Bone Marrow Culture and the Influence of Stromal Support Cells. By BRIAN A. NAUGHTON and GAIL K. NAUGHTON	125
Evidences That Fibroblasts and Epithelial Cells Produce a Specific Type of Macrophage and Granulocyte Inducer, Also Known as Colony-Stimulating Factor, and That Monocyte-Macrophages can Produce Another Factor with Proliferative Inducing Activity on Myeloid Cells and Differentiative Activity on Macrophages. By Isaac R. Zambrano, Julio R. Caceres, Jorge F. Mendoza, Edelmiro Santiago, Lourdes M. Mora, Maria G. Morales, Maria T. Corona, and Benny Weiss-Steider	141
Part V. Colony-Stimulating Factors for Megakaryocytopoiesis and Granulopoiesis	
Development of a Radioimmunoassay for Human Macrophage Colony- Stimulating Factor (CSF-1). By RICHARD K. SHADDUCK and ABDUL WAHEED	156
Molecular Characterization of Colony-Stimulating Factors and Their Receptors: Human Interleukin-3. By DAVID L. URDAL, VIRGINIA PRICE, HELMUT M. SASSENFELD, DAVID COSMAN, STEVEN GILLIS, and LINDA S. PARK	167
The Effects of Oxidizing Species Derived from Molecular Oxygen on the Proliferation In Vitro of Human Granulocyte-Macrophage Progenitor Cells.  By Hal E. Broxmeyer, Scott Cooper, and Theodore Gabig	177
Humoral Regulation of Stem Cell Proliferation. By Макіо Одаwа, Келл Ікевисні, and Anne G. Leary	185
Regulation of Human Megakaryocytopoiesis. By MICHAEL W. LONG	192

)

## Part VI. Red Cell Development and Senescence

Regulation of Human Fetal Hemoglobin Gene Expression. By JAMES KAYSEN. MARYANN DONOVAN-PELUSO, SANTINA ACUTO, DAVID O'NEILL, and 206 Cell Membrane and Volume Changes during Red Cell Development and Aging. By Narla Mohandas and Warren Groner ..... 217 Part VII. Growth Factors in Clinical Hematology The Use of Recombinant Erythropoietin in the Treatment of the Anemia of Chronic Renal Failure. By Joseph W. Eschbach, N. Rebecca Haley, and JOHN W. ADAMSON ..... 225 In Vivo Biologic Activities of Recombinant Human Granulocyte-Macrophage Colony-Stimulating Factor. By SAROJ VADHAN-RAJ, WALTER N. HITTELMAN, HAL E. BROXMEYER, MICHAEL KEATING, DAVID URDAL, and JORDAN U. GUTTERMAN ..... 231 Granulomonopoiesis and Production of Granulomonopoietic Regulating Factors in Hodgkin's Disease and Non-Hodgkin's Lymphomas. By XAVIER LÒPEZ-KARPOVITCH, MARIA ROCIO CARDENAS, EDUARDO LOBATO-MENDIZABAL, and JOSEFA PIEDRAS 241

## Financial assistance was received from:

- AMGEN
- CONNAUGHT LABORATORIES, LTD.
- COULTER ELECTRONICS CORPORATION
- E. I. DU PONT DE NEMOURS AND COMPANY
- KIRIN BREWERY COMPANY, LTD.
- MERCK SHARPE AND DOHME RESEARCH LABORATORIES

Index of Contributors .....

249

- PHARMACIA DELTEC, INC.
- PHARMACIA LKB NUCLEAR MICROTOMY, INC.
- SMITH KLINE AND FRENCH LABORATORIES
- TECHNICON INSTRUMENTS CORPORATION
- TOYOBO NEW YORK, INC.

The New York Academy of Sciences believes it has a responsibility to provide an open forum for discussion of scientific questions. The positions taken by the participants in the reported conferences are their own and not necessarily those of the Academy. The Academy has no intent to influence legislation by providing such forums.



